

ITW



<h1>TRANSMITTAL FORM</h1> <p>(to be used for all correspondence after initial filing)</p>	Application Number	10/809,317	
	Filing Date	03/24/2004	
	First Named Inventor	G. Ramanath	
	Art Unit	2813	
	Examiner Name	Kielen, Erik J	
Total Number of Pages in This Submission	27	Attorney Docket Number	5002.02-1

ENCLOSURES (check all that apply)		
<input type="checkbox"/> Fee Transmittal Form <input type="checkbox"/> Fee Attached <input type="checkbox"/> Amendment / Reply <input type="checkbox"/> After Final <input type="checkbox"/> Affidavits/declaration(s) <input type="checkbox"/> Extension of Time Request <input type="checkbox"/> Express Abandonment Request <input checked="" type="checkbox"/> Information Disclosure Statement <input type="checkbox"/> Certified Copy of Priority Document(s) <input type="checkbox"/> Response to Missing Parts/ Incomplete Application <input type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53	<input type="checkbox"/> Drawing(s) <input type="checkbox"/> Licensing-related Papers <input type="checkbox"/> Petition <input type="checkbox"/> Petition to Convert a Provisional Application <input type="checkbox"/> Power of Attorney, Revocation Change of Correspondence Address <input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Request for Refund <input type="checkbox"/> CD, Number of CD(s) _____	<input type="checkbox"/> After Allowance communication to Technology Center (TC) <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences <input type="checkbox"/> Appeal Communication to TC (Appeal Notice, Brief, Reply Brief) <input type="checkbox"/> Proprietary Information <input type="checkbox"/> Status Letter <input checked="" type="checkbox"/> Other Enclosure(s) (please identify below): Transmittal of IDS; Three References (AQ, AR, AU); and Postcard
<div>Remarks</div>		

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT	
Firm or Individual name	David J. Aston Reg. No. 28,051
Signature	<i>David J. Aston</i>
Date	December 29, 2004

CERTIFICATE OF TRANSMISSION/MAILING			
I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the			
Typed or printed name	Joan I. Abriam		
Signature	<i>Joan I. Abriam</i>	Date	December 29, 2004

This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the	: G. Ramanath, et al.	Art Unit.	: 2813
Application of			
Serial Number	: 10/809,317	Examiner	: Kielen, Erik J
Filed	: 03/24/2004		:
Title	: Diffusion Barriers		:
	Comprising Self-		
	Assembled Monolayers		
Confirmation		Customer	
Number	: 6500	Number	: 23308

CERTIFICATE OF MAILING or FACSIMILE TRANSMISSION UNDER 37 C.F.R. § 1.8(a)(1)

I hereby certify that this correspondence (along with any referred to as being attached or enclosed) is, on the date shown below, being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to Mail Stop IDS, Commissioner for Patents, P.O. Box 1450, Alexandria Virginia, 22323-1450, or facsimile transmitted to the U.S. Patent and Trademark Office on the date shown below.

Dated: 12/29/2004By: Joan I. AbriamPrinted Name: Joan I. AbriamTRANSMITTAL OF INFORMATION DISCLOSURE
STATEMENT UNDER 37 CFR § 1.97

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Pursuant to 37 C.F.R. § 1.97 and § 1.98, Applicants submit for consideration in the above-identified application the documents listed on the attached Form PTO-1449.

Copies of the documents were previously properly submitted in an Information Disclosure

Statement and/or Office Action, directed to the related application Serial Number 09/976,927, filed 10/11/2001, now abandoned, and, accordingly, copies are not included herewith. This protocol conforms with 37 C.F.R. § 1.98(d) and M.P.E.P. 609(A)(2). The Examiner is requested to make these documents of record in the application.

This Information Disclosure Statement is submitted:

Within three months of the application filing date or before mailing of a first Office Action on the merits; accordingly, no fee or separate requirements are applicable.

Applicants would appreciate the Examiner initialing and returning the Form PTO-1449, indicating that the information has been considered and made of record herein.

The information contained in the Information Disclosure Statement under 37 C.F.R. § 1.97 is not to be construed as a representation that: (i) a complete search has been made; (ii) additional information material to the examination of this application does not exist; (iii) the information, protocols, results and the like reported by third parties are accurate or enabling; or (iv) the above information constitutes prior art to the subject invention.

The dates of the references are provided relative to the effective filing date of the present application in accordance with M.P.E.P. § 702 III.IV, having the earliest priority filing date of 10/11/2001.

In the unlikely event that the transmittal letter is separated from this document and the Patent Office determines that an extension and/or other relief is required, applicant petitions for any required relief including extensions of time and authorizes the Assistant Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to Deposit Account No. 16-1331.

This submission is accompanied by a Transmittal Form, 1 Form 1449 and copies of the following references:

Three of the references were not considered properly submitted in the parent case. Accordingly, paper copies of the following references are being supplied herewith:

- AQ - Reed, MA. and Tour, J.M., "Computing with molecules," Scientific American, June 2000, pp. 86-93, Vol. 282(6).
- AR - Sekiguchi, A. et al., "Microstructural and morphological changes during thermal cycling of Cu thin films," J. Japan Inst. Metals, April 2000, pp. 379-382, Vol. 64 (5).
- AU - Moshfegh, A.Z. et al., "Bias sputtered Ta modified diffusion barrier in Cu/Ta(V₂/Si(111)) structures," Thin Solid Films, July 2000, pp 10-17, Vol. 370.

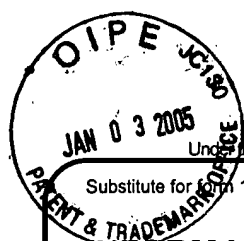
In accordance with M.P.E.P §609.III, Minimum Requirements For an Information Disclosure Statement, copies Of U.S. patents cited herein are not included since this application was filed after June 23, 2003. Also, no copy of any cited U.S. patent application is included, in accordance with USPTO Notice dated September 21, 2004, <http://www.uspto.gov/web/offices/pac/dapp/opla/preognotice/rule98waiverd.pdf>.

Respectfully submitted,

PETERS, VERNY, JONES & SCHMITT, LLP

By David J. Aston

David J. Aston, Reg. No. 28,051
Tel.: (650) 324-1677
Fax: (650) 324-1678



Substitute for Form 1449A/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Complete if Known

Application Number	10/809,317
Filing Date	03/24/2004
First Named Inventor	G. Ramanath
Group Art Unit	2813
Examiner Name	Kielen, Erik J
Attorney Docket Number	5002.02-1

Sheet 1

of 2

U.S. PATENT DOCUMENTS

Examiner Initials *	Cite No. ¹	Document Number	Publication Date/ Issue Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number - Kind Code ² (if known)			
	AA	US - 4,996,075	02-1991	Ogawa et al.	
	AB	US - 5,057,339	10-1991	Oawa, Kazufumi	
	AC	US - 5,077,085	12-1991	Schnur et al.	
	AD	US - 5,079,600	01-1992	Schnur et al.	
	AE	US - 5,389,496	02-1995	Calvert et al.	
	AF	US - 5,468,597	11-1995	Calabrese et al.	
	AG	US - 5,500,315	03-1996	Calvert et al.	
	AH	US - 5,510,216	04-1996	Calabrese et al.	
	AI	US - 5,648,201	07-1997	Dulcey et al.	
	AJ	US - 5,939,150	08-1999	Steizle et al.	
	AK	US - 6,348,240 B1	02-2002	Calvert et al.	

FOREIGN PATENT DOCUMENTS

Examiner Initials *	Cite No. ¹	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T ⁶
		Country Code ³ - Number ⁴ - Kind Code ⁵ (if known)				

OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS

Examiner Initials *	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
	AL	Ahrens, C. et al., "Electrical characterization of conductive and non-conductive barrier layers for Cu-metallization," Applied Surface Science, 1995, pp. 285-290, Vol. 91.	
	AM	Ding, P.J. et al., "Effects of the addition of small amounts of Al to copper: Corrosion, resistivity, adhesion, morphology, and diffusion," J. Appl. Phys., April 1994, pp. 3627-3631, Vol. 75(7).	
	AN	Ding, P.J. et al., "Oxidation resistant high conductivity copper films," Appl. Phys. Lett. May 1994, pp. 2897-2899, Vol. 64(21).	
	AO	McBayer, J.D. et al., "Diffusion of metals in silicon dioxide," J. Electrochem. Soc., June 1986, pp. 1242-1246, Vol. 133(6).	
	AP	Raghavan, G. et al., "Diffusion of copper through dielectric films under bias temperature stress," Thin Solid Films, 2995, pp. 168-176, Vol. 262.	

Examiner
Signature

Date
Considered

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). ² See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04.

³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

Substitute for form 1449A/PTO

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**

(use as many sheets as necessary)

Complete if Known

Application Number	10/809,317
Filing Date	03/24/2004
First Named Inventor	G. Ramanath
Group Art Unit	2813
Examiner Name	Kielen, Erik J
Attorney Docket Number	5002.02-1

Sheet 2

of 2

AQ	Reed, M.A. and Tour, J.M., "Computing with molecules," Scientific American, June 2000, pp. 86-93, Vol. 282(6).	
AR	Sekiguchi, A. et al., "Microstructural and morphological changes during thermal cycling of Cu thin films," J. Japan Inst. Metals, April 2000, pp. 379-382, Vol. 64(5).	
AS	ASM Handbook Vol. 5, Surface Engineering, ASM International: Materials Park, Ohio, 1994, pp. 315-318.	
AT	Porterfield, Inorganic Chemistry, A Unified Approach, Addison-Wesley: Reading, Massachusetts, 1984, pp. 487-488.	
AU	Moshfegh, A.Z. et al., "Bias Sputtered Ta Modified Diffusion Barrier in Cu/Ta(V ₂ Si(111) Multilayer Structure, Thin Solid Films, 370:10-17 (July 2000).	
AV	Simon, Richard A. et al., "Synthesis and Characterization of a New Surface Derivatizing Reagent To Promote the Adhesion of Polypropylene Films to n-Type Silicon Photoanodes: N-(3-(Trimethoxysilyl)pyrrole," J. Am. Chem. Soc., 104:2031-2034 (1982).	
AW	Yin, H. et al., "Nanostructured iron-nickel thin films synthesized by electroless polyol deposition," Mater. Phys. Mech, 4:56-61 (2001).	
AX	Wolf et al., "Silicon Processing for the ULSI Era," Vol. 1 - Process Technology, 2 nd Ed., Lattice Press; Sunset Beach, CA, 2000, pp. 438, 782-783.	

Examiner
SignatureDate
Considered

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). ² See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04.

³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.